

## PATENT COOPERATION TREATY

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INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

## (PCT Article 36 and Rule 70)

Applicant's or agent's file reference	<b>FOR FURTHER ACTION</b>	
	See Form PCT/PEA/416	
International application No. PCT/EP2004/001512	International filing date (day/month/year) 13.02.2004	Priority date (day/month/year) 24.03.2003
International Patent Classification (IPC) or national classification and IPC C11D3/20		
Applicant UNILEVER PLC et al		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 6 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> <i>sent to the applicant and to the International Bureau</i> a total of 7 sheets, as follows:</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</li> <li><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</li> </ul> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> Box No. I Basis of the opinion</li> <li><input type="checkbox"/> Box No. II Priority</li> <li><input type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</li> <li><input type="checkbox"/> Box No. IV Lack of unity of invention</li> <li><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</li> <li><input type="checkbox"/> Box No. VI Certain documents cited</li> <li><input type="checkbox"/> Box No. VII Certain defects in the international application</li> <li><input type="checkbox"/> Box No. VIII Certain observations on the international application</li> </ul>		
Date of submission of the demand  17.08.2004	Date of completion of this report  22.04.2005	
Name and mailing address of the international preliminary examining authority:   European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer  Bertran Nadal, J  Telephone No. +31 70 340-3924	



**INTERNATIONAL PRELIMINARY REPORT  
ON PATENTABILITY**

International application No.  
PCT/EP2004/001512

**Box No. I Basis of the report**

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
  - This report is based on translations from the original language into the following language , which is the language of a translation furnished for the purposes of:
    - international search (under Rules 12.3 and 23.1(b))
    - publication of the international application (under Rule 12.4)
    - international preliminary examination (under Rules 55.2 and/or 55.3)
2. With regard to the **elements\*** of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):

**Description, Pages**

6-15	as originally filed
1-5	received on 29.12.2004 with letter of 22.12.2004

**Claims, Numbers**

1-5	received on 29.12.2004 with letter of 22.12.2004
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- a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing

3.  The amendments have resulted in the cancellation of:
  - the description, pages
  - the claims, Nos.
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):
4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
  - the description, pages
  - the claims, Nos. 1-5
  - the drawings, sheets/figs
  - the sequence listing (*specify*):
  - any table(s) related to sequence listing (*specify*):

\* If item 4 applies, some or all of these sheets may be marked "superseded."

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**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

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**1. Statement**

Novelty (N)	Yes:	Claims	7
	No:	Claims	1-6, 8-12
Inventive step (IS)	Yes:	Claims	
	No:	Claims	1-12
Industrial applicability (IA)	Yes:	Claims	1-12
	No:	Claims	

**2. Citations and explanations (Rule 70.7):**

**see separate sheet**

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REPORT ON PATENTABILITY  
(SEPARATE SHEET)**

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**Re Item I**

**Basis of the report**

The reasoned statement under Item V is based on the claims 1-12 as originally filed. In amended claim 1 the applicant has deleted the following feature:

"the composition or the component therefor [...], without the salt being present, has a hygroscopicity value of greater than 25%".

This feature is presented as essential in the disclosure of the invention in the light of the technical problem which it seeks to solve. Its deletion introduces subject-matter which extends beyond the content of the application as filed, contrary to Article 34(2)(b) PCT.

In the application as filed, lower values of hygroscopicity were also disclosed (cf. original claim 5 a hygroscopicity value of greater than 5%), but there is no support for compositions or components of any hygroscopicity value.

Furthermore, the feature "wherein substantially all of the magnesium stearate is present at the surface of the particles" can also not be found in the application as filed.

**Re Item V**

**Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

1. The subject-matter of claim 1 refers to a free-flowing detergent composition or component therefor which comprises a bi- or tri-valent metal ion carboxylic acid salt which, without the salt being present, has a hygroscopicity value of greater than 25%. However, in view of the passage on page 5 paragraph 1 and claim 5 it appears that the invention also applies to particulate materials having a hygroscopicity value lower than 25%, without the salt being present. This inconsistency renders the matter for which protection is sought unclear (Article 6 PCT).

2. In view of the passage on page 4 lines 16-25 it appears that the parameter hygroscopicity value has to be measured under certain specific conditions. In order to meet the requirements of Article 6 PCT, the definition of the parameter should be introduced into claim 1.

3. The problem to be solved in the present invention appears to be the improvement of the

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physical properties of particulate detergent compositions or components therefor due to water uptake, namely the flowability of the particles. In view of the results shown in the present examples, it is clear that the problem is solved when a bi- or tri- valent metal ion carboxylic acid salt is layered onto the surface of the particles. It is however at present not clear if the problem would be solved if the carboxylic acid salt would not be present at the surface of the particles, for instance, if it would be in the core of the particles. If the coating of the particles is an essential feature of the invention, this feature should be introduced into claim 1.

4. Reference is made to the following documents:

- D1: US-A-3 925 226
- D2: US-A-4 196 095
- D3: US-A-2 932 556
- D4: WO 92/21744 A
- D5: US-A-4 395 345

5. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1 and 11 is not new in the sense of Article 33(2) PCT.

Documents D1-D5 disclose free-flowing detergent granules or particles comprising calcium or magnesium salts of a fatty acid, which are prepared by adding a calcium or magnesium fatty acid salt to a detergent particle. Even if the hygroscopicity value of these prior art detergent particles is not disclosed, they are described as hygroscopic or hydratable and it appears that if the hygroscopicity would be measured under the conditions described in the present application on page 4 lines 16-25, the values would fall within the range disclosed in the present application (noting that a hygroscopicity value of 2% falls within the scope of the present invention, cf. paragraph 1 above).

The document D1 discloses a hygroscopic detergent particle that is coated with calcium or magnesium stearate to improve the fluidity and to prevent the hygroscopic solidification of the composition (cf. D1 column 1 line 67-column 2 line 15, column 3 lines 24-47, claims 1, 4, examples 1-10, table 2).

The document D2 discloses a detergent composition or component therefor, in particulate form, which is hydratable, and to which magnesium stearate is added (cf. D2 column 1 lines 40-63, column 2 line 58-column 3 line 5, column 3 lines 47-51, claim 1, examples). The document D3 discloses a method for producing free-flowing hygroscopic components, by addition of magnesium stearate (cf. D3 column 1 lines 28-58, column 2 lines 6-13, claims 1,

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6, examples 1-3).

The document D4 discloses laundry additive particles that are coated with magnesium stearate to improve the solubility while maintaining the flowability of the particles (cf. D4 page 3 line 27-page 4 line 12, page 5 line 33-page 6 line 9, page 9 lines 7-9, claims 1, 10). The document D5 discloses free-flowing detergent granules that comprise calcium stearate for improving the dispensability of the granules, independently of their water content (cf. D5 column 1 lines 24-29, column 1 line 46-column 2 line 2, claims 1-3, examples).

The subject-matter of claims 1 and 11 is therefore not new in the sense of Article 33(2) PCT.

6. Furthermore, the prior art documents D1, D3 and D5 (cf. paragraph 5 above) teach the use of bi- or tri- valent metal ion carboxylic acid salt for improving the flowability of detergent particles. In particular, document D1 discloses a magnesium stearate coating. The introduction of the hygroscopicity parameter into claim 1 does not provide a surprising effect, since it is to be expected that if the hygroscopicity of a particle (i.e. its hygroscopicity value) is higher, the result achieved by coating it with a bi- or tri- valent metal ion carboxylic acid salt will be better. Therefore it appears that the subject-matter of present claim 1 lacks an inventive step (Article 33(3) PCT).

7. Dependent claims 2-10, 12 do not contain any features which, in combination with the features of any claim to which they refer, meet the requirements of the PCT in respect of novelty and/or inventive step (Article 33(2) and (3) PCT).

7.1 The features of dependent claims 2-5, 8-10, 12 have already been employed for the same purpose in a similar detergent particle, see document D1 and paragraph 5 above.

7.2 The features of dependent claim 6, have already been employed for the same purpose in a similar detergent particle, see document D2 and paragraph 5 above.

7.3 In claim 7 a slight change in the composition or component of claim 6 is defined which comes within the scope of the customary practice followed by persons skilled in the art, especially as the advantages thus achieved can readily be foreseen.

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CLAIMS

1. A free-flowing particulate detergent composition or component therefor which comprises 2.5 to 5% by weight of magnesium stearate, based on the weight of the composition or component before addition of the magnesium stearate, the magnesium stearate being particulate and layered onto the surfaces of the detergent composition or component, wherein substantially all of the magnesium stearate is present at the surface of the particles.
2. A composition or component as claimed in claim 1, wherein, without the magnesium stearate being present, has a hygroscopicity value of greater than 5%, preferably greater than 10%, more preferably greater than 20%.
3. A composition or component as claimed in claim 1 or 2, wherein the magnesium stearate has a number average particle size of from 0.1 to 500 micrometres, preferably from 1 to 200 micrometres, more preferably from 2 to 100 micrometres, most preferably from 3 to 50 micrometres, or even from 3 to 20 micrometres.
4. A composition or component as claimed in any preceding claim wherein the particles are adjunct components selected from the group comprising; bleach or enzyme granules and effervescent granules.

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5. A component according to claim 4 which is a perfume granule comprising maltose and polybutyl methacrylate.

29.12.2004

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DETERGENT COMPOSITION OR COMPONENT THEREFOR

TECHNICAL FIELD

- 5 The present invention relates to a particulate detergent composition or component therefor which comprises a magnesium stearate layering agent.

BACKGROUND AND PRIOR ART

10 Modern particulate detergent composition contain a wide variety of ingredients. At the same time the consumer requires a particulate detergent composition which has acceptable physical characteristics such as, for example, 15 being flowable and pourable in the case of powders and having good dispensing and dissolution properties in the case of tablets. The physical properties must remain acceptable even after storage for a number of weeks in the supply chain.

20 Many ingredients which provide a useful benefit to the detergent composition are difficult to include because they are liquid. However, liquid ingredients are not in themselves a problem as long as sufficient liquid carrying 25 capacity is present in the solid portion of the detergent. Of more difficulty are the ingredients which are hygroscopic, which may be either liquid or solid.

Hygroscopic materials are difficult to handle since they absorb atmospheric moisture over time during storage and can 30 lead to a deleterious effect on physical properties such as undesired caking and subsequent reduction in flowability at

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the point of use or a reduction in dispensability,  
dispersability or dissolution rate.

US 4,196,095 (Church & Dwight) discloses a carbonate based  
5 detergent composition which comprises magnesium stearate in  
order to reduce insoluble lump formation in cold water.

US 2,589,330 (Swift & Co) discloses a cleansing composition  
comprising trisodium phosphate and silica. A magnesium  
10 compound is added to prevent caking.

The present inventors have found that specific carboxylic  
acid salts are especially effective at reducing the negative  
effects on physical properties of particulate detergent  
15 compositions or components therefor due to moisture uptake.

Thus, the present invention provides a free-flowing  
particulate detergent composition or component therefor  
which comprises a magnesium stearate layering agent.  
20

#### DETAILED DESCRIPTION OF INVENTION

##### The Magnesium Stearate

25 The magnesium stearate is particulate and is layered onto  
the surface of the detergent composition or component.

Preferably the magnesium stearate has 18 carbon atoms.

30 The Magnesium stearate is in particulate form. It has a  
number average particle size of from 0.1 to 500 micrometres,

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preferably from 1 to 200 micrometres, more preferably from 2 to 100 micrometres, most preferably from 3 to 50 micrometres, or even from 3 to 20 micrometres.

- 5 The magnesium stearate is present on the surface of the particles, and this is often referred to in the art as layering.

The magnesium stearate is present at a level of from 2.5 to  
10 5 wt%, based on the weight of the composition or component before addition of the carboxylic acid salt.

The Composition or Component Therefor

- 15 The present invention applies equally to detergent compositions and to components of detergent compositions which are designed to be added to an already manufactured detergent composition. For example the invention applies to detergent base powder particles made by spray-drying or  
20 granulation as well as adjunct components such as bleach or enzyme granules, perfume granules, effervescent granules etc. Preferred perfume granules comprise maltose and Polybutylmethacrylate.

- 25 The term "hygroscopicity value", as used herein, means the level of moisture uptake by the composition or component, as measured by the percent increase in weight of the particles under the following test method. The hygroscopicity value is determined by placing 2 grams of particles (approximately  
30 500 microns in size) in a closed container of volume  $0.01\text{m}^3$  under conditions of  $25^\circ\text{C}$  and 70% relative humidity for a

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period of 2 days. The percent increase in weight of the particles at the end of this time is the particles' hygroscopicity value as used herein.

- 5 Since the magnesium stearate reduces the negative effects of moisture uptake, the invention relates to compositions or components which are hygroscopic. It is not known whether the magnesium stearate reduces the amount of water uptake or whether it prevents caking without reducing water uptake.
- 10 In any case the invention applies to detergent compositions or components which, without magnesium stearate being present, have a hygroscopicity value of at least 2%, preferably greater than 5%, preferably greater than 10%, more preferably greater than 20%.

15

#### Organic Detergent Surfactant

- 20 Finished detergent compositions of the present invention contain an organic detergent surfactant. Components for detergent compositions which are also part of the invention do not necessarily comprise surfactant.

- 25 Detergent-active compounds (surfactants) may be chosen from soap and non-soap anionic, cationic, nonionic, amphoteric and zwitterionic detergent-active compounds, and mixtures thereof. Many suitable detergent-active compounds are available and are fully described in the literature, for example, in "Surface-Active Agents and Detergents", Volumes I and II, by Schwartz, Perry and Berch. The preferred detergent-active compounds that can be used are soaps and synthetic non-soap anionic and nonionic compounds. The
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total amount of surfactant present is suitably within the range of from 5 to 60 wt%, preferably from 5 to 40 wt%.

Anionic surfactants are well-known to those skilled in the art. Examples include alkylbenzene sulphonates, particularly linear alkylbenzene sulphonates having an alkyl chain length of C<sub>8</sub>-C<sub>15</sub>; primary and secondary alkylsulphates, particularly C<sub>8</sub>-C<sub>20</sub> primary alkyl sulphates; alkyl ether sulphates; olefin sulphonates; alkyl xylene